

Diagnostic Engineering Publications

1410/7010

IBM POUGHKEEPSIE

December 31, 1965

Subject: Diagnostic Program W002G 1403 Forms Control Test

Sequence Number 545
Replaces W002F

This program uses System and Channel Control Cards -

System Control Card	W002	001
Channel One Control Card	W002	002
Channel Two Control Card	W002	003
Channel Three Control Card	W002	004
Channel Four Control Card	W002	005

The following changes were made to W002F to create W002G -

1. All references to channel 3 & 4 operation were deleted.
2. An error in the set up of a 100 character print buffer for channel 2 was corrected.
3. Changes & corrections were made to the Print Error and Forms Control Error Routines.
4. Changes and corrections to the "Time High Speed Skip" routine to increase timing accuracy, check for lower limit as well as upper limit and reduce the upper limit to detect skip time failures on the 1403 model 3.

Enclosures: 48

Pages

Card Deck for CARD ONLY SYSTEMS (as punched by UP51)

8 Cards - Card Loader (1-7) and 1 Core Clear

115 Cards No. 001-115 Data Cards

1 Card Execute Card

Distribution: X 1410 with 1403 Printer
X 7010

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Page 3

W 0 0 2 G

1403 FORMS CONTROL TEST

12/31/64

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5.00.00.0 TEST DESCRIPTION

00.1 MODIFICATIONS

See Release Page for modifications to create this level.

00.2 DESCRIPTION

This diagnostic tests all possible forms control operations associated with a printed line such that a visual check for correctness can be made. High speed skip is also timed to insure that the carriage of the 1403 does enter a high speed skip on a skip of 29 lines.

The first sheet of the printed form will have a line of 100 nines, space 1 to 3 after print, space 1 to 3 immediate, skip 1 to 12 immediate and branch on channel 9 and 12. The second sheet of the form will have a line of 100 nines, space 1 to 3 after print, space 1 to 3 immediate, skip 1 to 12 after print, branch on channel 9 and 12, a test of the high speed skip, and (if applicable) a test of the space suppress feature.

Errors in spacing and skipping can be overlooked; therefore, it is suggested that the carriage tape be removed from the 1403 and compared carefully with the printed form. Sample printouts can be found in the appendix, section 5.00.07.0.

All error messages will occur on the typewriter because the numeric chain 1403 cannot print alphabetic information. Note also that the information printed during the test is entirely numeric and special characters when using a printer with a numeric chain (see appendix, section 5.00.07.0).

00.2 EQUIPMENT

1. 1414 Model III, IV or VIII.
2. 1403 Printer Model 1, 2, or 3 (with alpha or numeric chain).

00.4 CARD DECK

See bottom of Release Page for description of card deck.

00.5 E.C. LEVEL OF MACHINE
Not applicable.

5.00.01.0

LOADING PROCEDURES

01.1

FROM CARDS (Load Program L1A preceding Card Deck)

A. 1410 or 7010 without Load Button.

1. Display Memory Location 00000
2. Alter to
v v v
RL%1100011\$. Enter according to channel
v v v location of the card reader.
XL%1100011\$.
3. Set to Run, Computer Reset and Start.

B. 7010 with Load Button

1. Computer Reset
2. Depress Load Button

01.2

FROM TAPE

A. 1410 or 7010 without Load Button

1. Display Memory Location 00000
2. Alter to
v v v
RL%B000011\$. Enter according to channel
v v v location of the tape drive.
XL%B000011\$.
3. Set to Run, press Computer Reset.

B. 7010 with Load Button

1. Computer Reset
2. Depress Load Button

System and Channel control cards are used by this program. These cards must have the system and channel configuration in the proper columns of the cards before the program is loaded into core. (See listing of the program "1410/7010 INTRODUCTION vol 1.00, for punching information.)

5.00.01.3 **LOADING PROCEDURES (continued)**

A special printer carriage control tape must be used. It must be installed on the 1403 printer before the program is loaded into core. The tape should be punched as follows:

<u>Line</u>	<u>Channel</u>	<u>Line</u>	<u>Channel</u>
1	1	67	1
18	1	84	1
21	2	87	2
24	3	90	3
27	4	93	4
30	5	96	5
33	6	99	6
36	7	102	7
39	8	105	8
42	9	108	9
45	10	111	10
48	11	114	11
51	12	117	12
53	9	119	9
58	12	124	12

Cut off tape at line 132. Mount the tape in the 1403 and set the line spacing control for six lines per inch.

5.00.02.0 OPERATING PROCEDURES

For normal operation of the program no TADs or other information need be entered until the "REQ. SPACE SUPPRESS TAD" message occurs. At this time press Inquiry Request, enter a one to test space suppress or enter a blank to bypass space suppress test, and then press Inquiry Release.

If the program stops or hangs up during the pass, refer to section 5.00.04.0, Program Stops and Restarts, for information.

STANDARD TADs

TAD 0	Loc 01000	Off	1	Type all errors
		On	1	Bypass all error typeouts
TAD 1	Loc 01001	Off	1	Run complete program
		On	1	Loop in the same routine
TAD 2	Loc 01002	Off	1	Bypass all error halts
		On	1	Halt on all errors
TAD 3	Loc 01003	Off	1	One pass of program
		On	1	Repeat entire program

NOTE:

The "Program Alter Routine" is included in this test to allow the operator to alter any portion of the program, TADs, data fields, etc., with a minimum of effort at any time during the program pass. To use this routine press the 1415 INQUIRY REQUEST key and enter the five-digit address of the low order position of memory to be altered when the typewriter prints the letter "I" and spaces. After the address has been entered, press the Inquiry Release and the Inquiry Request again, the typewriter will again print an "I" and space. At this time the new information can be entered into memory. When the alterations are complete, press Inquiry Release and the program will resume the test.

If an error is made in typing in the address of core to be altered or the data, simply press Inquiry Cancel and press Inquiry Request once more.

5.00.03.0 OPERATING HINTS, COMMENTS

1. At the beginning of the test, the program identification will be typed. (If the program is repeated or restarted, the identification will not be retyped.) At the conclusion of the program pass a message, W002 EOJ, will be typed if tad 0 is Off. Therefore, a proper operation pass should appear on the console typewriter in the following format.

R	W002X. where x represents test level.
R	REQ SPACE SUPPRESS TAD
I	1
R	W002 EOJ
2. If any messages occur other than listed in item 1., an error has been detected by the program.
3. If the message W002 EOJ does not occur, it is because either error typeouts have been bypassed (possibility of an error occurring which would not be indicated) or the program has not run to completion.
4. After a program pass, the 1403 output should be compared both with carriage tape and the sample printouts listed in the appendix section 5.00.07.0.
5. The 1403 output will be the same regardless of buffer size (100 or 132 characters).
6. If all of the following messages appear on a program pass; it indicates that the J (I) R (channel 1) instruction is not operating properly.

BRANCH ON CHANNEL 9 FAILED
BRANCH ON CHANNEL 12 FAILED
BRANCH ON CHANNEL 9 FAILED
BRANCH ON CHANNEL 12 FAILED
FORMS FAILED TO SKIP TO CHANNEL 12
1403 FAILED TO ENTER HIGH SPEED SKIP

5.00.04.0 PROGRAM STOPS AND RESTARTS

PROGRAM STOPS

This program does not contain any normal STOPS. All error STOPS are preceded by error messages and are under program (TAD) control. After any error stop, press Start to continue.

PROGRAM RESTARTS

A program restart may be accomplished at any time by simply pressing Computer Reset and Start.

PROGRAM HANG UP CONDITIONS

After the message "REQ SPACE SUPPRESS TAD" occurs, press typewriter INQUIRY REQUEST, enter the proper digit (1 or 6) and then press INQUIRY RELEASE. The program will then continue.

Note: If a space or skip after print command is issued, a correct line must be printed before another forms control operation is attempted. If a restart is performed after a forms control operation (after print) and before the next line is printed, the program will hang up on busy.

5.00.05.0

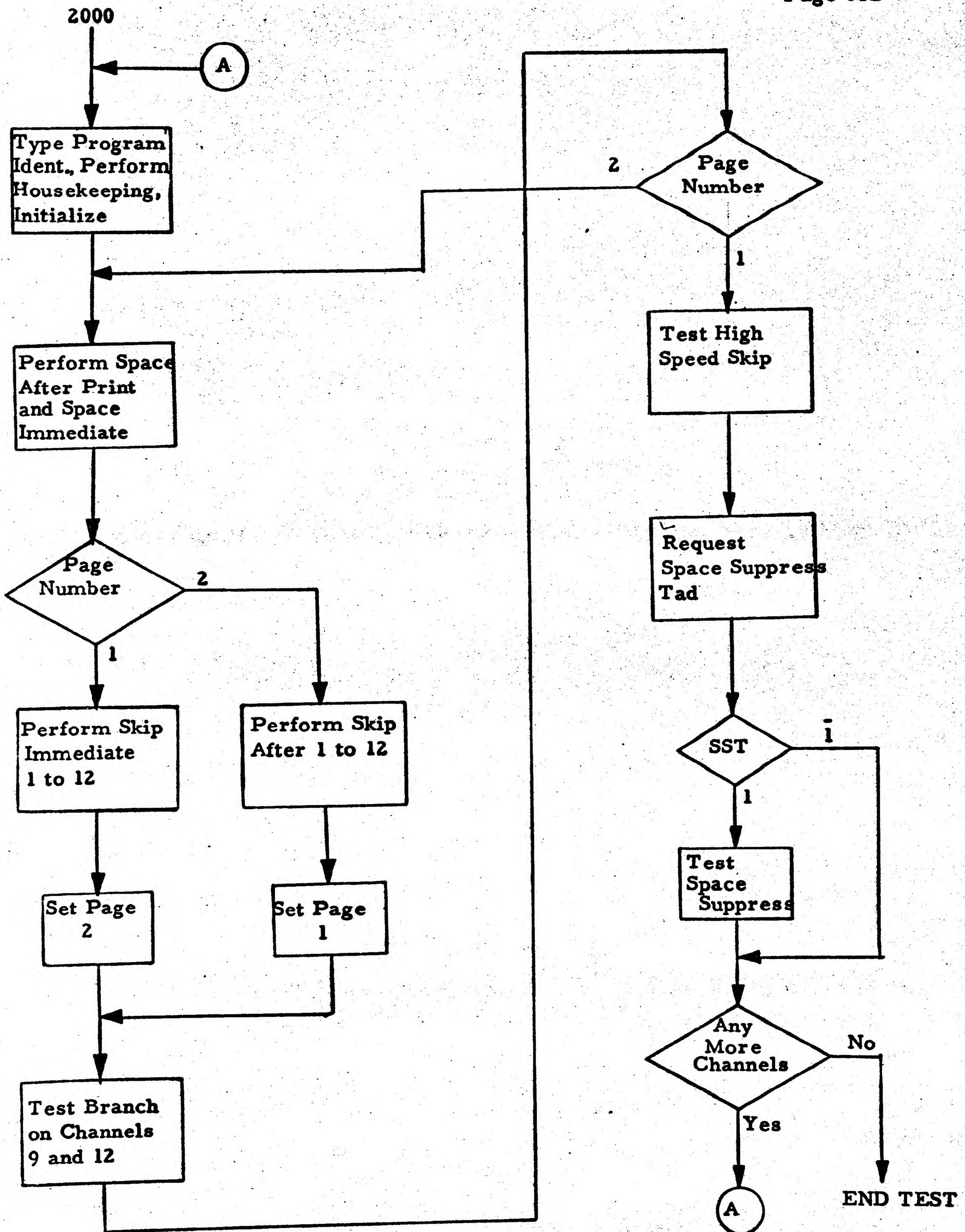
TYPEOUTS

NORMAL TYPEOUTS

1. W002x (x represents test level). This is the test identification. The identification is typed only once when the program is first loaded.
2. NO CHANNEL SET ON SYSTEM CONTROL CARD. This message indicates that a channel was not available as punched on the systems control card.
3. REQ SPACE SUPPRESS TAD. This is a request for a space suppress control tad. Press Inquiry Request, enter proper tad (see section 5.00.02.0), and press Inquiry Release.
4. W002 EOJ. This typeout indicates the completion of one complete program pass.

ERROR TYPEOUTS

All error typeouts are self-explanatory. See the program listing for further information.



5.00.07.0

APPENDIX

CORRECT 1403 OUTPUT

1. Figure I, sheets 1, 2, and 3 show the correct output on the 1403 printer with alpha chain and not entering a 1 for the Space Suppress TAD.
2. Figure II, sheet 1 shows page 3 of the correct output on the 1403 printer with alpha chain and entering a 1 for the Space Suppress TAD providing that your system does not have the Space Suppress Feature.

On systems with the space suppress feature, the last two lines of Figure II, sheet 1, should be superimposed upon one another so that it should appear as follows:

SPACE SUPPRESS PRINTER ~~KKKOR~~

W00Z
014

SPACE 3 AFTER PRINT

SPACE 3 IMMEDIATE

TEST BRANCH ON CHANNEL 9,1403

Figure I
Sheet 1.

SPACE 3 AFTER PRINT

SPACE 1 IMMEDIATE

SPACE 2 IMMEDIATE

SPACE 3 IMMEDIATE

SKIP TO CHANNEL 1 AFTER PRINT

Figure
Sheet 2

SKIP TO CHANNEL 2 AFTER PRINT

SKIP TO CHANNEL 3 AFTER PRINT

SKIP TO CHANNEL 4 AFTER PRINT

SKIP TO CHANNEL 5 AFTER PRINT

SKIP TO CHANNEL 6 AFTER PRINT

SKIP TO CHANNEL 7 AFTER PRINT

SKIP TO CHANNEL 8 AFTER PRINT

SKIP TO CHANNEL 9 AFTER PRINT

SKIP TO CHANNEL 10 AFTER PRINT

SKIP TO CHANNEL 11 AFTER PRINT

SKIP TO CHANNEL 12 AFTER PRINT

TEST BRANCH ON CHANNEL 9,1403

TEST BRANCH ON CHANNEL 12,1403

Figure I.
Sheet 3.

TEST HIGH SPEED SKIP 2 TO 12

HIGH SPEED SKIP O.K.

Figure II
Sheet 1.

TEST HIGH SPEED SKIP 2 TO 12

HIGH SPEED SKIP O.K.
SPACE SUPPRESS PRINTER ERROR
SPACE SUPPRESS PRINTER XXXXX

W002 - PRINTER FORMS CONTROL TEST

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CT ADDR5 INSTRUJCTION

LABEL

OPCOD OPERAND

LOAD

LINES 37

ORG 1000

01000

STANDARD TADS

NOT 1

TAD0 DC 2 2 TYPE OUTPUT BYPASS TPVING 1 01000
TAD1 DC 2 2 NO LOOPS LOOP ROUTINE 1 01001
TAD2 DC 2 2 NO ERROR HALTS HALT ON ERR 1 01002
TAD3 DC 2 2 ONE PROGRAM PASS REPEAT PRDG 1 01003
TAD4 DC 2 2 1 01004

PROGRAM ALTER ROUTINE

PALT G SBR PALTEX65 7 01005 G 01084 B
DCW 2N 12 01023
RCP PALT264 10 01024 M 210 01059 R
BEX1 *-16.M 7 01034 R 01024 M
BNT1 PALTEX 7 01041 R 01079 B
BA1 *61 7 01048 R 01055 M
PALT2 RCPW 0 10 01055 L 210 00000 R
BEX1 *-16.M 7 01065 R 01055 M
BA1 *61 7 01072 R 01079 M
PALTEX B 0 7 01079 J 00000

STANDARD TYPE ROUTINE

PRT1 SBR PRT265 7 01086 G 01135 B
SBR PRT368 7 01093 G 01127 B
PRT2 SCNRG 0,0 12 01100 D 00000 00000 Q
SAR PRT465 7 01112 G 01148 A
PRT3 WCP 0 10 01119 M 210 00000 M
BCB1 *-16 7 01129 R 01119 2
BA1 *61 7 01136 R 01143 M
PRT4 B 0 7 01143 J 00000
H 1 01150

W002 - PRINTER FORMS CONTROL TEST

CT ADDR INSTRUCTION

LABEL OPCOD OPERAND

CONTROL INFORMATION

ORG 1239 01239
DCW 2PM9PJ0545*92 11 01249

TEST IDENTIFICATION

ORG 1250 01250
DCW 2W002G2.G 5 01254

STANDARD SYSTEM CONTROL CARD.

SYS1	ORG	DC	1256	CHARACTER & PURPOSE	COL
	DC	2	2	ALPHA 0.1,X - 1410,1410ACC,7010	13
	21 DC	2	2	0.1,3.5,7.9-10,20,40,60,80,100K	14
	22 DC	2	2	SPARE	15
	23 DC	2	2	1.2-CHNL1 100,132 CHAR PRINTER	16
	24 DC	2	2	1.2-CHNL2 100,132 CHAR PRINTER	17
	25 DC	2	2		
	27 DC	2	2	1 - OVERLAP	20
	28 DC	2	2	1 - PRIORITY ALERT	21
	211 DC	2	2	SPARES	22-24
	212 DC	2	2	1 - CHANNEL ONE PRESENT	25
	213 DC	2	2	1 - CHANNEL TWO PRESENT	26
	DC	2	2	NOT INTERROGATED	
	DC	2	2		

	01256
1	01256
1	01257
1	01258
1	01259
1	01260
2	01262
1	01263
1	01264
3	01267
1	01268
1	01269
18	01287
1	01288

W002 - PRINTER FORMS CONTROL TEST

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LABEL OPCOD OPERAND

CT ADDR INSTRUCTION

***STANDARD CHANNEL 1 CONTROL CARD.

CHN1	ORG	1289	CHARACTER & PURPOSE	COL
	DC	a	a NOT INTERROGATED	01289
16	DC	a	a P - 1403 PRINTER	01289
1	DC	a	a A,N - ALPHA,NUMERIC PRINT CHAIN 30	01305
1	DC	a	a 1.2 - 100,132 CHAR PRINT BUFFER 31	01306
1	DC	a	a NOT INTERROGATED	01307
18	DC	a	a NOT INTERROGATED	01325
18	DC	a	a	01343
2	DC	a	a	01345

***STANDARD CHANNEL 2 CONTROL CARD.

CHN2	ORG	1346	CHARACTER & PURPOSE	COL
	DC	a	a NOT INTERROGATED	01346
16	DC	a	a P - 1403 PRINTER	01346
1	DC	a	a A,N - ALPHA,NUMERIC PRINT CHAIN 30	01362
1	DC	a	a 1.2 - 100,132 CHAR PRINT BUFFER 31	01363
1	DC	a	a NOT INTERROGATED	01364
18	DC	a	a NOT INTERROGATED	01382
18	DC	a	a	01400
2	DC	a	a	01402

LABEL

OPCODE OPERAND

CT ADDR INSTRUCTION

TEST STARTS HERE

ORG	2000	CT	ADDR	INSTRUCTION
NOP		1	02000	N
B	INDID	7	02001	J 06057
CW	SW1	6	02008	D 02031
CS	99	6	02014	/ 00099
MRCWG	RSTART.1	12	02020	D 07025 00001 L
SW	30.35	11	02032	, 00030 00035
SW	40.45	11	02043	, 00040 00045
S	49	6	02054	S 00049
S		1	02060	S
S		1	02061	S
S		1	02062	S
S	CHSV	6	02063	S 06955
MLNA	ADD1,STARAD	12	02069	D 06950 06936 /
MLNA	ADD2,STOPAD	12	02081	D 06965 06941 /
BCE	CHAN1,SYS1&12.1	12	02093	B 02214 01268 1
BCE	CHAN2,SYS1&13.1	12	02105	B 02426 01269 1
BCE	END,CHSV.1	12	02117	B 06168 06955 1
B	PRT1	7	02129	J 01086
DCW	a NO CHANNEL SET ON SYS CTL CD2.G	29	02164	
RCP	SYS1&12	10	02166	M 01268 R
BEX1	*-16.M	7	02176	R 02166 M
G	BA1	7	02183	R 02190 M
G	2000	7	02190	J 02000
G	AN	17	02213	

GO TO INDICATE TITLE
SET IDENT BYPASS
SET
INDEX
REGS
2
THRU
5
SET CHAN ALTER START
SET CHAN ALTER STOP
BR IF CHAN 1 AVAIL
BR IF CHAN 2 AVAIL
BR IF CHAN WAS AVAIL
a FILLER

W002 - PRINTER FORMS CONTROL TEST

LABEL	W002 - PRINTER FORMS CONTROL TEST		W002		PAGE 23
	OPCODE	OPERAND	CT	ADDRS INSTRUCTION	
CHAN1	SBR	CHANR&5	7	02214 G 06166 B	
	BCE	*&8,CHN1&16,P	12	02221 B 02240 01305 P	
	B	CHANR	7	02233 J 06161	
	MLCS	ONE,CHSV	12	02240 D 07034 06955 3	
	S	X2	6	02252 S 00034	
	NOP		1	02258 N	
	BCE	*&20,CHN1&17,N	12	02259 B 02290 01306 N	
	MLCA	ALPH,CHAIN	12	02271 D 06972 06971 T	
	B	*&13	7	02283 J 02302	
	MLCA	NUM,CHAIN	12	02290 D 06973 06971 T	
ABCD AAA1	BCE	AA&1,CHN1&18,1	12	02302 B 02345 01307 1	
	MLCWS	ABCD&6,POUT&100	12	02314 D 02344 09800 7	
	MLCS	TWO,SIZE	12	02326 D 07035 06954 3	
	B	AAA2	7	02338 J 02369	
	MLCS	ONE,SIZE	12	02345 D 07034 06954 3	
	MLCWS	WMGM,POUT&100	12	02357 D 07033 09800 7	
	MLCS	ONE,BOLOM	12	02369 D 07034 06942 3	
	MLCS	CH1U,CHCODE	12	02381 D 06946 06944 3	
	MLCS	CH1S,CHSTAT	12	02393 D 06950 06943 3	
	B	CHSTT	7	02405 J 06216	
AAA2	B	TITLE	7	02412 J 04233	
	B	START	7	02419 J 03062	

BR IF CHAN.1 1403
 RETURN TO PROGRAM
 SET CHAN AVAIL
 RESET X2

BR IF NUMERIC CHAIN

BR IF 100 CHAR BUFF
 MOVE A BLANK

BOL MOD TO 1
 SET & TO CHAN ALTER
 SET R TO CHAN ALTER
 GO TO ALTER PROGRAM
 PRINT LINE OF 9 S
 GO TO START PRINTER

LABEL	OPCODE	OPERAND
CHAN2	SBR	CHANR&5
	BCE	*&8,CHN2&16,P
	B	CHANR
	MLCS	ONE,CHSV
	S	X2
	NOP	
	BCE	*&20,CHN2&17,N
	MLCA	ALPH,CHAIN
	B	*&13
	MLCA	NUM,CHAIN
	BCE	AAA3,CHN2&18,1
G	MLCWS	ABCD&6,POUT&100
	MLCS	TWO,SIZE
	B	AAA4
AAA3	MLCS	ONE,SIZE
	MLCWS	WMGM,POUT&100
AAA4	MLCS	TWO,BOLOM
	MLCS	CH2U,CHCODE
	MLCS	CH2S,CHSTAT
	B	CHSTT
	B	TITLE
	B	START
G	H	
	ORG	3062

PRINT LINE OF 9 S

CT	ADDRS	INSTRUCTION
7	02426	G 06166 B
12	02433	B 02452 01362 P
7	02445	J 06161
12	02452	D 07034 06955 3
6	02464	S 00034
1	02470	N
12	02471	B 02502 01363 N
12	02483	D 06972 06971 T
7	02495	J 02514
12	02502	D 06973 06971 T
12	02514	B 02557 01364 1
12	02526	D 02344 09800 7
12	02538	D 07035 06954 3
7	02550	J 02581
12	02557	D 07034 06954 3
12	02569	D 07033 09800 7
12	02581	D 07035 06942 3
12	02593	D 06947 06944 3
12	02605	D 06951 06943 3
7	02617	J 06216
7	02624	J 04233
7	02631	J 03062
1	02638	.
	03062	

LABEL	OPCODE	OPERAND	CT	ADDR'S	INSTRUCTION
SPACE AFTER PRINT ROUTINE					
START	S	X3	6	03062	S 00039
	CS	POUT&50	6	03068	/ 09750
	BCE	*E13,CHAIN,A	12	03074	B 03098 06971 A
	MLNA	ADD4,X3	12	03086	D 06970 00039 /
	MLCWS	WMGM,POUT&132	12	03098	D 07033 09832 7
	BCE	*E13,SIZE,2	12	03110	B 03134 06954 2
	MLCWS	WMGM,POUT&100	12	03122	D 07033 09800 7
	MRCG	MESS1&X3,POUT	12	03134	D 070H2 09700 \$
SPAL	CC	/	2	03146	F /
	BCB1	*-8	7	03148	R 03146 2
	BAI	FORER	7	03155	R 05045 M
	BNQ	PALT	7	03162	J 01005 Q
	BCE	SPAL,TAD1,1	12	03169	B 03146 01001 1
WR1	W	POUT	10	03181	M 220 09700 W
	BCB1	*-16	7	03191	R 03181 2
	BAI	PERR	7	03198	R 05531 M
	BNQ	PALT	7	03205	J 01005 Q
	BCE	WR1,TAD1,1	12	03212	B 03181 01001 1
SPA2	CS	POUT&50	6	03224	/ 09750
	MRCG	MESS3&X3,POUT	12	03230	D 07143 09700 \$
	CC	S	2	03242	F S
	BCB1	*-8	7	03244	R 03242 2
	BAI	FORER	7	03251	R 05045 M
	BNQ	PALT	7	03258	J 01005 Q
	BCE	SPA2,TAD1,1	12	03265	B 03242 01001 1
WR2	W	POUT	10	03277	M 220 09700 W
	BCB1	*-16	7	03287	R 03277 2
	BAI	PERR	7	03294	R 05531 M
	BNQ	PALT	7	03301	J 01005 Q
	BCE	WR2,TAD1,1	12	03308	B 03277 01001 1

LABEL	OPCODE	OPERAND	CLEAR PRINT AREA MOVE SPACE 3 AFTER	CT	ADDRS	INSTRUCTION
SPA3	CS	POUT&50		6	03320	/ 09750
	MRCG	MESS4&X3,POUT		12	03326	D 07184 09700 S
	CC	T		2	03338	F T
	BCB1	*-8		7	03340	R 03338 2
	BA1	FORER		7	03347	R 05045 M
	BNQ	PALT		7	03354	J 01005 Q
WR3	BCE	SPA3,TAD1.1	BR IF LOOP	12	03361	B 03338 01001 I
	W	POUT		10	03373	M 320 09700 W
	BCB1	*-16		7	03383	R 03373 2
	BA1	PERR		7	03390	R 05531 M
	BNQ	PALT		7	03397	J 01005 Q
	BCE	WR3,TAD1.1	BR IF LOOP	12	03404	B 03373 01001 I

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LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
SPACE IMMEDIATE ROUTINE					
SPI1	CS	POUT&50	6	03416	/ 09750
	MRGG	MESS5&X3,POUT	12	03422	D 071D5 09700 S
	CC	J	2	03434	F J
	BCB1	*-8	7	03436	R 03434 Z
	BA1	FORER	7	03443	R 05045 M
	BNQ	PALT	7	03450	J 01005 Q
	BCE	SPI1,TAD1,1	12	03457	B 03434 01001 I
					BR IF LOOP
WR4	W	POUT	10	03469	M &20 09700 W
	BCB1	*-16	7	03479	R 03469 Z
	BA1	PERR	7	03486	R 05531 M
	BNQ	PALT	7	03493	J 01005 Q
	BCE	WR4,TAD1,1	12	03500	B 03469 01001 I
					PRINT SPACE 1 IMED.
SPI2	CS	POUT&50	6	03512	/ 09750
	MRGG	MESS6&X3,POUT	12	03518	D 071F6 09700 S
	CC	K	2	03530	F K
	BCB1	*-8	7	03532	R 03530 Z
	BA1	FORER	7	03539	R 05045 M
	BNQ	PALT	7	03546	J 01005 Q
	BCE	SPI2,TAD1,1	12	03553	B 03530 01001 I
					BR IF LOOP
WR5	W	POUT	10	03565	M &20 09700 W
	BCB1	*-16	7	03575	R 03565 Z
	BA1	PERR	7	03582	R 05531 M
	BNQ	PALT	7	03589	J 01005 Q
	BCE	WR5,TAD1,1	12	03596	B 03565 01001 I
					PRINT SPACE 2 IMED.
CLEAR PRINT AREA					
MOVE SPACE 2 IMED.					

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LABEL	OPCODE	OPERAND	CLEAR PRINT AREA MOVE SPACE 3 IMED.	CT	ADDRS	INSTRUCTION
SPI3	CS	POUT&50		6	03608	/ 09750
	HRCG	MESS7&X3,POUT		12	03614	D 071H7 09700 \$
	CC	L		2	03626	F L
	BCB1	*-8		7	03628	R 03626 2
	BA1	FORER		7	03635	R 05045 M
	BNQ	PALT		7	03642	J 01005 Q
	BCE	SPI3,TAD1.1	BR IF LOOP	12	03649	B 03626 01001 1
WR6	W	POUT	PRINT SPACE 3 IMED.	10	03661	M 320 09700 W
	BCB1	*-16		7	03671	R 03661 2
	BA1	PERR		7	03678	R 05531 M
	BNQ	PALT		7	03685	J 01005 Q
FSPI	BCE	WR6,TAD1.1	BR IF LOOP	12	03692	B 03661 01001 1
	B	*&1	GO TO SKIP IMMED.OR AFTER	7	03704	J 03711

W002 -- PRINTER FOR MS CONTROL TEST

LABEL

OPCODE OPERAND

CT ADDR INSTRUCTION

W002

PAGE 29

SKIP IMMEDIATE ROUTINE

SKIPI

HLNA ADD3,FSPI&S
S X5
S

12 03711 D 06988 03709 /
6 03723 S 00049
1 03729 S

SKIR

HLCS ONE&X4,SKI&1
CS POUT&50
HRCG MESS&CX3,POUT
HLCA MOOS&X5,POUT&10

12 03730 D 07434 03773 3
6 03742 / 09750
12 03748 D 07248 09700 4
12 03760 D 074J7 09718 T

SKI

CC 1
BCB1 *-8
BA1 FORER

2 03772 F 1
7 03774 R 03772 2
7 03781 R 05045 M

PRINT SKIP IMMED. X

10 03788 M 320 09700 W

W POUT
BCB1 *-16
BA1 PERR
BNQ PALT

7 03798 R 03788 2
7 03805 R 05531 M
7 03812 J 01005 Q

BCE SKI,TAD1,1
A TWO,X5
A

12 03819 B 03772 01001 1
11 03831 A 07035 00049
1 03842 A

BCE BCH912,SKI&1,3
B SKIR

12 03843 B 03862 03773 2
7 03855 J 03730

BR IF LOOP
ADD 2 TO X5
ADD 1 TO X4
BR IF SKIPPED 1-12
BR IF NOT

W002 - PRINTER FOR MS CONTROL TEST

CT ADDR INSTRUCTION

LABEL

OPCODE OPERAND

BRANCH ON CHANNEL 9 AND 12

BCH912	CS	POUT&99	CLEAR PRINT AREA	6	03862	/ 09799
	BNQ	PALT		7	03868	J 01005 Q
SKIP9	CC	9	SKIP TO 9 IMMED.	2	03875	F 9
	BCB1	--8		7	03877	R 03875 Z
	BA1	FORER		7	03884	R 05045 M
	BPCB	--6	WAIT FOR 1403 TO 9	7	03891	J 03891 R
	BC9	CH9DK	BR IF CHAN 9	7	03898	J 03971 9
	BCE	CH9H.TAD0.1	BR IF BYPASS ERROR	12	03905	B 03951 01000 1
	B	PRT1		7	03917	J 01086
	DCW	BRANCH ON CHANNEL 9 FAILED2.G		26	03949	
CH9H	BCE	*E2.TAD2.	BR IF BYPASS HALT	12	03951	B 03964 01002
	H			1	03963	.
	BNQ	PALT		7	03964	J 01005 Q
CH9DK	BCE	BCH912.TAD1.1	BR IF LOOP	12	03974	B 03862 01001 1
NR7	MRCG	MESS9&X3.POUT	MOVE CHAN 9 BR MESS.	12	03983	D 072D0 09700 S
	W	POUT	PRINT BR ON CHAN 9	10	03995	M &20 09700 W
	BCB1	--16		7	04005	R 03995 Z
	BA1	PERR		7	04012	R 05531 H
	BNQ	PALT		7	04019	J 01005 Q
	BCE	WR7.TAD1.1	BR IF LOOP	12	04026	B 03995 01001 1
SKIP12	CC	2	SKIP TO CHAN 12 IMMED	2	04038	F 2
	BCB1	--8		7	04040	R 04038 Z
	BA1	FORER		7	04047	R 05045 M
	BPCB	--6	WAIT FOR 1403 TO 12	7	04054	J 04054 R
	BCV	CH12OK		7	04061	J 04128 2
	BCE	CH12H.TAD0.1	BR IF BYPASS ERROR	12	04068	B 04115 01000 1
	B	PRT1		7	04080	J 01086
	DCW	BRANCH ON CHANNEL 12 FAILED2.G		27	04113	
CH12H	BCE	*E2.TAD2.	BR IF BYPASS HALT	12	04115	B 04128 01002
	H			1	04127	.
	BNQ	PALT		7	04128	J 01005 Q
CH12OK	BCE	SKIP12.TAD1.1	BR IF LOOP	12	04135	B 04038 01001 1

W002 - PRINTER FOR MS CONTROL TEST

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LABEL	OPCODE	OPERAND	CLEAR PRINT AREA	CT	ADDRS	INSTRUCTION
NR8	CS	POUT699		6	04147	/ 09799
	NRCG	MESS106X3,POUT	MOVE CHAN 12 BR MESS	12	04153	D 07262 09700 3
	W	POUT	PRINT BR ON CHAN 12	10	04165	M 320 09700 W
	BCB1	--16		7	04175	R 04165 2
	BAL	PERR		7	04182	R 05531 M
	BNQ	PALT		7	04189	J 01035 Q
	BCE	WR8,TAD1,1	BR IF LOOP	12	04196	B 04165 01001 1
	C	FSPI65,ADD6	SEE IF PAGE 2	11	04208	C 03709 06993
	BU	TITLE	BR IF NOT	7	04219	J 04233 /
	B	TIMES	GO TO TIME HIGH SPD	7	04226	J 04457

COME HERE TO PRINT LINE OF 9 S

TITLE	CS	POUT699	CLEAR PRINT AREA	CT	ADDRS	INSTRUCTION
	SW	POUT	SET WM TO STOP MOVE	6	04233	/ 09799
	NLCB	NINE,POUT699	MOVE A NINE	6	04239	. 09700
	NLCB	POUT699,POUT698	MOVE 99 MORE	12	04245	D 07042 09799 3
	W	POUT	PRINT LINE OF NINES	12	04257	D 09799 09798 L
	BCB1	--16		10	04269	M 320 09700 W
	BAL	PERR		7	04279	R 04269 2
	CS	POUT699		7	04286	R 05531 M
	B	START	GO TO DO NEXT PAGE	6	04293	/ 09799
				7	04299	J 03062

CT ADDR INSTRUCTION

LABEL

OPCODE OPERAND

SKIP AFTER PRINT

SKIPA

MLNA ADD6,FSPIE3

S X5

RESET X5

12 04306 D 06993 03709 /

6 04318 S 00049

AND X4

SKAR

MLCS AMODSE4,SKA&1

CS POUT&50

MOVE SKIP MODIFIER

CLEAR PRINT AREA

MRCG MESS11&X3,POUT

MOVE SKIP AFTER X MESSAGE

MLCA MODSE4,POUT&18

MOVE CHAN NO. TO PRINT

SKA

CC A

SET SKIP AFTER

BCB1 *-8

BA1 FORER

W POUT

PRINT SKIP AFTER MESS

BCB1 *-16

BA1 PERR

BNQ PALT

BCE SKA, IAD1, 1

BR IF LOOP

A TWO, X5

ADD 2 TO X5

A

ADD 1 TO X4

BCE BCH912,SKA&1, B

BR IF SKIPPED TO 12

B SKAR

BR IF NOT

12 04325 D 07470 04368 3

6 04337 / 09750

12 04343 D 073M4 09700 3

12 04355 D 074J7 09718 1

2 04367 F A

7 04369 R 04367 2

7 04376 R 05045 M

10 04383 M 220 09700 W

7 04393 R 04383 2

7 04400 R 05531 M

7 04407 J 01005 Q

12 04414 B 04367 01001 1

11 04426 A 07035 00049

1 04437 A

12 04438 B 03862 04368 B

7 04450 J 04325

W002 - PRINTER FOR MS CONTROL TEST

W002 PAGE 33

LABEL

OPCODE OPERAND

CT ADDR INSTRUCTION

TIME HIGH SPEED SKIP

TIMES

S ACCUM

RESET TIME ACCUM.

BAL *E1

6 04457 S 06999 G

CC 2

SKIP IMMED. TO 2

7 04463 R 04470 M

BCB1 *-8

2 04470 F 2

BAL FORER

7 04472 R 04470 2

CS POUTE50

7 04479 R 05045 M

MRCG MESS12&X3,POUT

MOVE TEST HIGH SPEED

6 04486 / 09750

W POUT

PRINT MESSAGE

12 04492 D 073C6 09700 S

BCB1 *-16

10 04504 M 320 09700 W

BAL PERR

7 04514 R 04534 2

MLCA TIMX,TIMC

MOVE 7010 TIME CONST.

7 04521 R 05531 M

BCE *E37,SYS1,X

BR IF 7010

12 04528 D 07008 07017 T

MLCA TIM10,TIMC

MOVE 1410 TIME CONST.

12 04540 B 04588 01256 X

BCE *E13,SYS1,0

BR IF

12 04552 D 07014 07017 T

MLCA TIM1,TIMC

MOVE 1410 ACCELERATOR

12 04564 B 04588 01256 0

S ACCUM

6 04588 S 06999

WAIT FOR NOT BUSY

7 04594 J 04594 R

CC 2

SKIP IMMED. TO 12

2 04601 F 2

BCB1 *-8

7 04603 R 04601 2

G A TIMC,ACCUM

ADD LOOP TIME TO ACCUMULATOR

11 04610 A 07017 06999

G BPCB *-17

KEEP ADDING WHILE CARRIAGE BUSY

7 04621 J 04610 R

BAL *E1

7 04628 R 04635 M

G BCY CKTIME

CHECK ON TIME ACCUMULATED

7 04635 J 04712 2

BCE HS12H,TAD0,1

BR IF BYPASS ERROR

12 04642 B 04704 01000 1

B PRT1

7 04654 J 01086

G DCW 2 FAILED TO SKIP TO CHANNEL 123,G

29 04689

G DCW 2N2

1 04691

BCE *E2,TAD2,

BR IF BYPASS HALT

12 04692 B 04705 01002

HS12H

1 04704

BNQ PALT

7 04705 J 01005 0

W002 - PRINTER FOR MS CONTROL TEST

W002 PAGE 34

LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
-------	--------	---------	----	-------	-------------

CKTIME	G	C			BE SURE ACCUMULATOR NOT ZERO
	G	BE	11	04712	C 06999 05289
		*E19	7	04723	J 04748 S
	G	C			COMPARE TO 180 MILLISECS
	G	BM	11	04730	C 06999 07005
		HSOK	7	04741	J 04832 U
	BCE	HSFH,TAD0,1	12	04748	B 04835 01000 1
	B	PRT1	7	04760	J 01086
	DCW	2 1403 FAILED TO ENTER2	21	04787	
	DC	2 HIGH SPEED SKIP2,G	16	04803	
HSFH	BCE	*E2,TAD2.	12	04805	B 04818 01002
	H		1	04817	.
	BNQ	PALT	7	04818	J 01035 Q
	B	SSUP	7	04825	J 06095

HSOK	CS	POUT650	6	04832	/ 09750
WR9	MRCG	MESS13&X3,POUT	12	04838	D 073F8 09700 S
	W	POUT	10	04850	M 320 09700 W
	BC81	*-16	7	04860	R 04850 Z
	BAL	PERR	7	04867	R 05531 M
	BNQ	PALT	7	04874	J 01005 Q
	BCE	TIMES,TAD1,1	12	04881	B 04457 01001 1
	B	SSUP	7	04893	J 06095

BR BACK IF LOOP TAD SET TO 1

W002 - PRINTER FOR MS CONTROL TEST

W002 PAGE 35

CT ADDR INSTRUCTION

OPCODE OPERAND

LABEL

SPACE SUPPRESS ROUTINE

SPSUP	SBR	SPSUP&5	7	04900	G	05043	B
	CS	POUT&50	6	04907	/	09750	
	MRCG	MESS14&X3,POUT	12	04913	D	07410	09700 \$
	W	POUT	10	04925	M	220	09700 M
	BCBI	*-16	7	04935	R	04925	2
	BAI	PERR	7	04942	R	05531	M
	CC	-	2	04949	F	-	
	BCBI	*-8	7	04951	R	04949	2
	BAI	FORER	7	04958	R	05045	M
	CS	POUT&50	6	04965	/	09750	
	MRCG	MESS15&X3,POUT	12	04971	D	07422	09700 \$
	W	POUT	10	04983	M	220	09700 M
	BCBI	*-16	7	04993	R	04983	2
	BAI	PERR	7	05000	R	05531	M
	BNQ	PALT	7	05007	J	01005	Q
	BCE	SPSUP&7,TA01,1	12	05014	B	04907	01001 1
	MLCS	9999,SST	12	05026	D	09999	07018 3
SPSUPR	B	0	7	05038	J	00000	

CLEAR PRINT AREA

W002 - PRINTER FOR MS CONTROL TEST

W002 PAGE 37

LABEL OPCODE OPERAND

CT ADDR INSTRUCTION

PRINT ERROR-ERROR ROUTINE

PERR SBR PERREX&5

SBR MOVEP&5

S &15,MOVEP&5

MOVEP MLCA O,PMES&17

SAR LOC

A &1,LOC

MLNA LOC,PMES&28

B TIND1

BCE PHALT,TAD0,1

B PRT1

PMES DCW @ INSTR.

BCE NRDY,WKAL-4,1

BCE PDCK,WKAL-3,4

BCE PCOND,WKAL-2,8

BCE PHLR,WKAL,B

BCE PNT,WKAL-1,A

PHALT BCE *&2,TAD2,

H

PERREX B 0

GO TO SAVE INDICATORS

LOC. 3.G

7	05531	G	05732	B
7	05538	G	05561	B
11	05545	S	09606	05561
12	05556	D	00000	05641 T
7	05568	G	07023	A
11	05575	A	09607	07023
12	05586	D	07023	05652 /
7	05598	J	05936	
12	05605	B	05714	01000 1
7	05617	J	01086	
29	05624			
12	05654	B	05242	06979 1.
12	05666	B	05734	06980 4
12	05678	B	05782	06981 8
12	05690	B	05857	06983 B
12	05702	B	05897	06982 A
12	05714	B	05727	01002
1	05726	.		
7	05727	J	00000	

W002 - PRINTER FOR MS CONTROL TEST

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CT ADDR INSTRUCTION

7 05734 J 01086

33 05773

7 05775 J 05714

12 05782 D 09730 05836 L

7 05794 J 01086

5 05805

31 05836

12 05849

7 05850 J 05714

7 05857 J 01086

25 05888

7 05890 J 05714

7 05897 J 01086

23 05926

7 05928 J 05714

1 05935

STATUS INDICATOR TEST ROUTINE

7 05936 G 06055 B

12 05943 D 06978 06983 T

7 05955 R 05974 1

12 05962 D 09999 06979 3

7 05974 R 05993 4

12 05981 D 09999 06980 3

7 05993 R 06012 8

12 06000 D 09999 06981 3

7 06012 R 06031 B

12 06019 D 09999 06982 3

7 06031 R 06050 -

12 06038 D 09999 06983 3

7 06050 J 00000

LABEL

POCK

B PRT1

DCW 2 CPU TO 1414 III DATA XFER ERROR 2.G

B PHALT

PCOND G MLCB POUT30.LINESS SET MESGE IN TYPEOUT AREA

B PRT1

DCW 2 S/B 2

LMESSG G 2 2.G

DCW 2N 2

B PHALT

PWLR

B PRT1

DCW 2 1403 WRONG LENGTH RECORD 2.G

B PHALT

PNT

B PRT1

DCW 2 1403 NO TRANSFER ERROR 2.G

B PHALT

H

TIND1

SBR TINDIR5

MLCA INDS,WKAI

BNRI *E13

MLCS 9999,WKAI-4

BERI *E13

MLCS 9999,WKAI-3

BEFI *E13

MLCS 9999,WKAI-2

BNTI *E13

MLCS 9999,WKAI-1

BWLI *E13

MLCS 9999,WKAI

B 0

TINDLR

MOVE INDICATORS

SUBTRACT NOT READY

SUBTRACT DATA CK

SUBTRACT CONDITION

SUBTRACT NO XFER

SUBTRACT WLR

W002 - PRINTER FOR MS CONTROL TEST

	INSTRUCTION
CT ADDR	

LABEL

OPCODE	OPERAND
00000000	00000000
00000001	00000001
00000010	00000010
00000011	00000011
00000100	00000100
00000101	00000101
00000110	00000110
00000111	00000111
00001000	00001000
00001001	00001001
00001010	00001010
00001011	00001011
00001100	00001100
00001101	00001101
00001110	00001110
00001111	00001111
00010000	00010000
00010001	00010001
00010010	00010010
00010011	00010011
00010100	00010100
00010101	00010101
00010110	00010110
00010111	00010111
00011000	00011000
00011001	00011001
00011010	00011010
00011011	00011011
00011100	00011100
00011101	00011101
00011110	00011110
00011111	00011111
00100000	00100000
00100001	00100001
00100010	00100010
00100011	00100011
00100100	00100100
00100101	00100101
00100110	00100110
00100111	00100111
00101000	00101000
00101001	00101001
00101010	00101010
00101011	00101011
00101100	00101100
00101101	00101101
00101110	00101110
00101111	00101111
00110000	00110000
00110001	00110001
00110010	00110010
00110011	00110011
00110100	00110100
00110101	00110101
00110110	00110110
00110111	00110111
00111000	00111000
00111001	00111001
00111010	00111010
00111011	00111011
00111100	00111100
00111101	00111101
00111110	00111110
00111111	00111111
01000000	01000000
01000001	01000001
01000010	01000010
01000011	01000011
01000100	01000100
01000101	01000101
01000110	01000110
01000111	01000111
01001000	01001000
01001001	01001001
01001010	01001010
01001011	01001011
01001100	01001100
01001101	01001101
01001110	01001110
01001111	01001111
01010000	01010000
01010001	01010001
01010010	01010010
01010011	01010011
01010100	01010100
01010101	01010101
01010110	01010110
01010111	01010111
01011000	01011000
01011001	01011001
01011010	01011010
01011011	01011011
01011100	01011100
01011101	01011101
01011110	01011110
01011111	01011111
01100000	01100000
01100001	01100001
01100010	01100010
01100011	01100011
01100100	01100100
01100101	01100101
01100110	01100110
01100111	01100111
01101000	01101000
01101001	01101001
01101010	01101010
01101011	01101011
01101100	01101100
01101101	01101101
01101110	01101110
01101111	01101111
01110000	01110000
01110001	01110001
01110010	01110010
01110011	01110011

COME HERE TO TYPE IDENT

INDIO	SBR	INDIDRES
INDIO	SBR	INDIDRES

BAL **#E1**

WCP 1250

BAI 4-16

INDICE

SPACE SUPPRESS ROUTINE

dns

B **PRT1**

DCW @REQ. SPACE SUPPRESS TAD@.G

RCP SST

BEX1 # - 16, M

BAL **• 31**

BCE SPSUP, SST, I

CHANR

0

GO TO TEST NEXT CHAN

END

BCE 2000, TAD3.1

BCE 400, TADO, L

PRIT

NEW ZOOLOGICAL GARDEN

B 400

7	06057	G	06093	B
7	06064	R	06071	M
10	06071	M	01250	M
7	06081	R	06071	M
7	06088	J	00000	

7	06095	J	01086
22	06123		
10	06125	M	370 07018 R
7	06135	R	06125
7	06142	R	06149 M
12	06149	B	04900 07018 1
7	06161	J	00000

12	06168	B	02000	01003	1
12	06180	B	00400	01000	1
7	06192	J	01086		
9	06207				
7	06209	J	00400		

CT ADDR INSTRUCTION

LABEL OPCODE OPERAND

CHANNEL ALTER ROUTINE

CHSTT SBR CHSTTR&S
MLNA STARAD,SCAN&10

SW 25

S 29

A &1,29

SCAN SCNLB 9999,0

SBR ADDHLD

A ONE,ADDHLD

C ADDHLD,STOPAD

BE CHSTTR

MLNA ADDHLD,*&6

MLCS 0,*&12

BCE CHINS,K1,M

BCE

BCE

BCE

BCE

BCE

BCE

BCE

BCE

BCE

BCE

BCE

S &1,ADDHLD

MLNA ADDHLD,SCAN&10

B SCAN

MLNA ADDHLD,*&11

MLCS CHCODE,0&X1

B UPDATE

MLNA ADDHLD,*&11

MLCS CHSTAT,0

B UPDATE

A &6,ADDHLD

MLNA ADDHLD,*&6

7 06216 G 06591 B

12 06223 D 06936 06268 /

6 06235 0 00025

6 06241 S 00029

11 06247 A 09607 00029

12 06258 D 09999 00000 -

7 06270 G 06931 B

11 06277 A 07034 06931

11 06288 C 06931 06941

7 06299 J 06586 S

12 06306 D 06931 06323 /

12 06318 D 00000 06341 3

12 06330 B 06397 06906 M

1 06342 B

6 06343 B 06428

1 06349 B

1 06350 B

1 06351 B

6 06352 B 06459

6 06358 B 06822

1 06364 B

1 06365 B

1 06366 B

11 06367 S 09607 06931

12 06378 D 06931 06268 /

7 06390 J 06258

12 06397 D 06931 06419 /

12 06409 D 06944 000#0 3

7 06421 J 06367

12 06428 D 06931 06450 /

12 06440 D 06943 00000 3

7 06452 J 06367

11 06459 A 09608 06931

12 06470 D 06931 06487 /

W002 - PRINTER FOR MS CONTROL TEST

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LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
	MLCS	0,*E12	12	06482	D 00000 06505 3
	BCE	OL,K2,1	12	06494	B 06555 06926 1
	BCE		1	06506	B
	BCE		1	06507	B
	BCE		1	06508	B
	BCE	BPCB0	6	06509	B 06593
	BCE		1	06515	B
	BCE	BCB0	6	06516	B 06815
	BCE		1	06522	B
	BCE	CH12	6	06523	B 06667
REDUCE	BCE		1	06529	B
	BCE	CH9	6	06530	B 06741
	BCE		1	06536	B
	S	E6,ADDHLD	11	06537	S 09608 06931
	B	UPDATE	7	06548	J 06367
OL	MLNA	ADDHLD,*E11	12	06555	D 06931 06577 /
	MLCS	BOLOM,0	12	06567	D 06942 00000 3
	B	REDUCE	7	06579	J 06537
CHSTTR	B	0	7	06586	J 00000
	BCE	*E32,BOLOM,2	12	06593	B 06636 06942 2
	MLNA	ADDHLD,*E11	12	06605	D 06931 06627 /
	MLCS	K2-4,0	12	06617	D 06922 00000 3
BPCB0	B	REDUCE	7	06629	J 06537
	MLNA	ADDHLD,*E11	12	06636	D 06931 06658 /
	MLCS	K2-5,0	12	06648	D 06921 00000 3
	B	REDUCE	7	06660	J 06537
	BCE	*E32,BOLOM,2	12	06667	B 06710 06942 2
	MLNA	ADDHLD,*E11	12	06679	D 06931 06701 /
	MLCS	K2-8,0	12	06691	D 06918 00000 3
	B	REDUCE	7	06703	J 06537
	MLNA	ADDHLD,*E11	12	06710	D 06931 06732 /
	MLCS	K2-9,0	12	06722	D 06917 00000 3
CH12	B	REDUCE	7	06734	J 06537
	BCE	*E32,BOLOM,2	12	06741	B 06784 06942 2
	MLNA	ADDHLD,*E11	12	06753	D 06931 06775 /
	MLCS	K2-10,0	12	06765	D 06916 00000 3
CH9	B	REDUCE	7	06777	J 06537

W002 - PRINTER FOR MS CONTROL TEST

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CT ADDR INSTRUCTION

LABEL OPCODE OPERAND

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*
* PROGRAM CONSTANTS
*
CH1U DCW AXA
CH2U G
CH1S
CH2S G
SIZE
CHSV
ADD1 TINDIR
ADD2 START
ADD4 00382
CHAIN 0
ALPH AXA
NUM ANA
INDS A148AB2
WKAL A A
ADD5 SKIPA
ADD6 SKIP1
ACCUM 000000
TOTAL G 180000
TIMX G 042
TIMI G 121
TIM10 G 149
TIMC 000
SST A A
LOC 00000
ORER 0
RSTART A J02000 A.G
WMGM ANA
ONE 1
TWO 2
THREE 3
FOUR 4
FIVE 5
1 06946
1 06947
2 06949
1 06950
1 06951
2 06953
1 06954
1 06955
5 06960 06050
5 06965 03062
5 06970
1 06971
1 06972
1 06973
5 06978
5 06983
5 06988 04306
5 06993 03711
6 05999
6 07005
3 07008
3 07011
3 07014
3 07017
1 07018
5 07023
1 07024
7 07025
1 07033
1 07034
1 07035
1 07036
1 07037
1 07038

```


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LABEL OPCOD OPERAND

CT ADDR INSTRUCTION

SIX
SEVEN
EIGHT
NINE
ZERO

6
7
8
9
0

MODS

a 1a
a 2a
a 3a
a 4a
a 5a
a 6a
a 7a
a 8a
a 9a
a 10a
a 11a
a 12a

AMODS

aAa
aBa
aCa
aDa
aEa
aFa
aGa
aHa
aIa
aJa
aKa
aLa
aMa
aNa
aOa
aPa
aQa
aRa
aSa
aTa
aUa
aVa
aWa
aXa
aYa
aZa

1 07039
1 07040
1 07041
1 07042
1 07043
1 07044
1 07045
2 07047
2 07049
2 07051
2 07053
2 07055
2 07057
2 07059
2 07061
2 07063
2 07065
2 07067
2 07069
1 07070
1 07071
1 07072
1 07073
1 07074
1 07075
1 07076
1 07077
1 07078
1 07079
1 07080
1 07081

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INSTRUCTION

CT ADDR

OPCOD OPERAND

LABEL

20 07082

MESS1 DCW @ SPACE 1 AFTER PRINT@,G

20 07103

MESS3 @ SPACE 2 AFTER PRINT@,G

20 07124

MESS4 @ SPACE 3 AFTER PRINT@,G

20 07145

MESS5 @ SPACE 1 IMMEDIATE @,G

20 07166

MESS6 @ SPACE 2 IMMEDIATE @,G

20 07187

MESS7 @ SPACE 3 IMMEDIATE @,G

31 07208

MESS8 @ SKIP TO CHANNEL IMMEDIATE @,G

31 07240

MESS9 @ TEST BRANCH ON CHANNEL 9,1403 @,G

31 07272

MESS10 @ TEST BRANCH ON CHANNEL 12,1403@,G

31 07304

MESS11 @ SKIP TO CHANNEL AFTER PRINT@,G

31 07336

MESS12 @ TEST HIGH SPEED SKIP 2 TO 12 @,G

31 07368

MESS13 @ HIGH SPEED SKIP O.K. @,G

31 07400

MESS14 @ SPACE SUPPRESS PRINTER ERROR @,G

31 07432

MESS15 @ SPACE SUPPRESS PRINTER XXXXX @,G

20 07464

MESS2 @ 00000 1 00000 00000@,G

20 07504

@ 00000 2 00000000000@,G

20 07525

@ 00000 3 00000000000@,G

20 07546

@ 11111 1 11111111111@,G

20 07567

@ 11111 2 11111111111@,G

20 07588

@ 11111 3 11111111111@,G

31 07620

@ 2222 22 2222222 222222222 @,G

31 07652

@ 7777 777777 77 7777777 9,7777 @,G

31 07684

@ 8888 888888 88 8888888 12,8888@,G

31 07716

@ 3333 33 3333333 3333333333@,G

31 07748

@ ---- ---- ---- 2 -- 12 @,G

31 07780

@ 0000 00000 0000 0.0. @,G

31 07812

@ ///// ///// ///// ///// ///// @,G

31 07844

@ ///// ///// ///// ///// \$\$\$\$ @,G

09700

ORG 9700

09700

DA 1X132,G

09600

ORG 9600

PST

END 2000

J02000

5 09604 07024

2 09606

1 09607

1 09608

END OF ASSEMBLY

SUMMARY**TITLE**

W002 1403 Forms Control Test

PURPOSE

To test all possible forms control operations associated with a printed line such that a visual check for correctness can be made.

LOADING PROCEDURES

See Loading Procedures.

SYSTEM AND CHANNEL CONTROL CARDS

This program must have the system and channel configuration punched correctly. (See instruction in INTRODUCTORY MATERIAL.)

TADS

Do not enter any TADs for normal operation. Normally set OFF (1).

STANDARD TADS

<u>TAD</u>	<u>Location</u>			
TAD 0	01000	OFF	1	Typeout
		ON	1	Bypass typeouts
TAD 1	01001	OFF	1	Proceed to next routine
		ON	1	Repeat the routine
TAD 2	01002	OFF	1	Bypass error halts
		ON	1	Halt on error
TAD 3	01003	OFF	1	One pass of program
		ON	1	Repeat program

NO SPECIAL TADS ARE USED

UNITS TESTED

1403 Printer

SEE PROGRAM WRITE-UP FOR DETAILS.

